

Section 2

BACKGROUND

2.1 DESCRIPTION

The current boundaries of the SSTB include 7,945 acres of land and 13,462 acres of water. The SSTB is located along Highway 86 at the southwest corner of the Salton Sea in the northwestern quarter of the Imperial Valley, approximately 10 miles south of Salton City and 40 miles northwest of El Centro (Figure 2-1).

The SSTB is an inactive facility with no working population (Figures 2-2 and 2-3). The base is under the command authority of the Eleventh Naval District, San Diego, California, with local coordination authority under **SWDIV**. With the exception of three buildings and two bunkers, the buildings, utilities, and infrastructure at the facility were salvaged, demolished, or abandoned in place prior to 1994. The security guard and all working personnel terminated activity at the base in September 1987.

Access to the site is uncontrolled, and the site is subject to limited unauthorized public use for a variety of recreational activities such as off-road vehicular activity, fishing, and shooting. The site provides the sole local unrestricted access to the shoreline of the Salton Sea, and people visit the site as tourists.

2.2 HISTORY - SSTB

The U.S. Navy conducted a preliminary inspection of the Salton Sea in January 1940, and the SSTB was initially commissioned as the Naval Auxiliary Air Station, Salton Sea, in October 1942. The SSTB originally functioned as an operational and training base for seaplanes. Additional activities at the base have included experimental testing of **solid-fuel** plane-launched rockets, jet-assist take-off testing, aeroballistic testing of inert atomic weapon test units at land and marine target areas, training bombing at marine targets, testing of the effects of long-term storage on atomic weapons, testing of the parachute landing systems of the Project Mercury space capsules, parachute training and testing, and military training exercises.

Except as noted otherwise, the historical summary presented in the following sections (Sections 2.2.1 through 2.2.7) is based on information contained in the PA (NEESA 1993) (see Section 2.3.1). The history of the specific sites evaluated as part of the SI are presented with the summary of results in Sections 6.3 through 6.28. The site-specific information is based on the findings and conclusions presented in the PA (NEESA 1993). Additional information was obtained from the following sources:

- contacts with former and current Sandia National Laboratories (Sandia) personnel (Sandia 1994a,b,c),
- aerial photographs and as-built plans of the base available from the NEESA files
- aerial photographs and as-built plans available from Naval Air Facility El Centro, and
- the archives of Los Alamos National Laboratory and Sandia National Laboratory.

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A listing of aerial photographs reviewed is presented in Table 2-1. These sources were reviewed principally to obtain information pertaining to the location of potential contaminant sources at the sites investigated. Selected historical drawings of the base are presented in Appendix A.

2.2.1 World War II Era

During World War II, the base comprised 2,780 acres and included the Paramount Runway, a 4,000-foot clay surface airstrip built in early 1942 by Paramount Studios for the movie “Wake Island.” The U.S. Navy and the Army-Navy Z-46 group conducted activities on the facility during this period.

2.2.1.1 U.S. NAVY OPERATIONS

The original function of the base was to serve as an operational base for seaplanes. The Navy used it as a torpedo and skip-bombing range. The facilities at the base consisted of the Paramount Runway, a marine railway, hanger, shops, barracks for 64 enlisted men, a shower building, galley, bachelor officers quarters, operations building, garage, power plant, storehouse, four magazines, ready ammunition lockers, and water and sewage lines. Improvements to the base circa 1948 are depicted in Appendix A (Figures A-1 through A-3).

The East-West Runway, a parking area, and additional magazines were constructed to support rocket development and training conducted between March 27 1944 and March 15 1945. The term “rocket” referred to anything that was different from ordinary bombing practice. Solid propellants were used in the rockets of that era.

The station was also used for experimental testing of Jet-Assist Take-off equipment by the BAR Aerojet Engineering Corporation in cooperation with the Navy in July of 1944. A stand was constructed for tests of propellant mixtures.

2.2.1.2 AEROBALLISTIC TESTING

Between December 1944 and June 1945, the Army-Navy Z-46 group (also referred to as “Project Y”) conducted aeroballistic tests of inert atomic weapon test units at the base. The Site 10MA Marine Target (Figure 2-2) was constructed to support these activities. The goal of the group was to assist in gathering data to give true readings of the flight characteristics of test units. The test drops were recorded using motion picture cameras mounted at various locations on the base. Project Y involved a total of 150 drops throughout the course of the program. Four full-sized “Fat Boy” models made of cast steel filled with concrete were dropped during December 1944. Other test units associated with Project Y contained lead filler.

A target consisting of a 30-foot diameter **bull’s-eye** within a 600-foot diameter ring was installed at the Site 10LA Land Target (Figure 2-2) in April 1945. The purpose of this target was to allow for aeroballistic testing and recovery of “1491-type” (probably in reference to the type of shape) units (Sandia 1994a). A total of six test units were

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dropped on the Site 10LA Land Target in April 1945. Due to the depth of penetration, only two of the units were recovered.

2.2.2 Post World War II Transfer and Base Renovation

2.2.2.1 BASE TRANSFER

The Navy relinquished control of the base for use as an aeroballistic atomic bomb test range in June 1946. The base was operated by entities involved with nuclear weapons development including the Manhattan Engineering District, Atomic Energy Commission (AEC), and Sandia Corporation, from June 1946 through March 1964. The Navy also used the SSTB as an emergency landing area for its seaplanes operating along the Pacific coast.

2.2.2.2 RENOVATION

Existing facilities at the SSTB in January 1947 included the control tower (located at the intersection of the Paramount and East-West Runways) and three camera stations. Telemetry ground station equipment was installed in a trailer positioned northwest of the control tower. The former Navy operations building housed the field test offices, an electronics maintenance shop, and the control tower. An old hangar was used as a camera maintenance shop and property office. The photo lab and machine shop were set up in former aircraft maintenance buildings. The original firehouse, carpentry shop, and officers quarters built by the Navy were retained for the same uses.

The base was renovated between October 1948 and November 1949. The new facilities included seven camera stations, two radar stations, radio transmission and receiving stations, road improvements, a trailer park, eight apartments, and two-three bedroom houses. The San Felipe Lodge, a hotel-type building comprising 54 rooms, six apartments, and dining and recreational facilities, was constructed in the main base area. A water treatment plant was built south of the base to process water withdrawn from the Trifolium Extension irrigation canal. The updated improvements are depicted in base drawings presented in Appendix A (Figures A-1 through A-3). By mid-1951, there were 60 full-time resident employees and additional commuting employees occupied with technical and maintenance matters at SSTB.

Camera stations were operated on two small islands in the Salton Sea, designated South Island (S-1) and North Island (S-2), between 1950 and 1952. The islands were abandoned due to rising water levels in the Salton Sea. The equipment and fuel tanks were removed from the islands, but the buildings remained and are currently underwater.

The Paramount and East-West Runways south of the main base and some small buildings near the water were abandoned prior to 1955 due to encroachment of the Salton Sea caused by rising water levels. A new airstrip was constructed west of the main base, and a dike was constructed during 1954 and 1955 to protect the buildings in the main base area from the rising water (Appendix A, Figures 2-2 and 2-3).

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2.2.3 Aeroballistic Testing

There were two main purposes for the test unit drops at SSTB: to test and evaluate ballistic and aerodynamic behavior of various weapon shapes and configurations; and to test the functional operation of internal weapon components, particularly fusing and firing systems, as the test unit fell toward the target. Telemetry was used to record the time and sequence of various operations within the test unit and other pertinent data such as pressure, temperature, vibration, and acceleration. Much of the information concerning the aeroballistic testing is classified. Available information is summarized below.

Sandia used two marine targets (Site **10MA** and Site **10MB**) for aeroballistic testing at the base. The original marine target (Site **10MA**) was located approximately 3,000 feet closer to shore than the target (Site **10MB**) identified in the SI Work Plan. The target was moved farther offshore to the area identified in the SI Work Plan after an errant test drop impacted on the tennis courts in the main base area. Sandia also constructed the Site **10LB** Land Target for aeroballistic testing in the mid-1950s. The total reported number of Sandia test drops prior to cessation of testing in July 1961 averaged about 150 per year, with a peak of 223 in 1952.

Only inert (nonexplosive) test units were dropped at the SSTB. Information reviewed by Sandia (Sandia 1994a,b) does not indicate that any test units dropped at the base, with the exception of one MK-6 “fly-around” unit, contained radioactive materials. The test units typically comprised stainless steel filled with arming, fusing, and **firing** components with concrete, lead, and/or stainless steel ballast. The test units may also have contained lesser amounts of aluminum and lead (**Pb**)/acid and nickel/cadmium (**Ni/Cd**) battery fragments associated with the arming, fusing, and firing components. The MK-6 “fly-around” unit contained 120 pounds of normal uranium. The unit was accidentally dropped at an unknown location in the Salton Sea during aerial testing of the test unit (Sandia 1994a,b).

The delivery method for the test units employed at the SSTB included both **parachute**-retarded and nonretarded (i.e., free-falling) drops. The nonretarded test units fragmented on impact at both the land and marine targets. “Penetrator-type” weapon shapes (designed to penetrate below the ground surface) were reportedly also tested at the land target. Standard practice included recovery of the nonretarded test unit fragments, parachute-retarded test units, and penetrator-type test units from the Site **10LB** Land Target for reuse and/or analysis of the fusing and firing mechanisms. Only one test unit is reported to have penetrated the ground too deeply to be recovered (Sandia 1994a).

The Site **10MA** and **10MB** water targets were also used for practice bombing by the Strategic Air Command (SAC). Sandia and SAC were responsible for testing and development of different parts of the atomic bomb. Sandia’s main responsibility was for the fusing and firing mechanisms. SAC reportedly dropped more than 2,550 test units at the water target; Sandia dropped fewer than 1,200 test units. Sandia provided photographic and telemetry services, communications, and scoring assistance during the SAC testing activities.

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2.2.4 Natural Environmental Test Program

The Natural Environmental Test Program (NETP) was conducted in the 1950s to evaluate the effects of long-term storage of atomic weapons in natural environments. Representative samples of different weapons containing plutonium and enriched uranium were subjected to natural arctic, desert, and tropical environments. The SSTB was chosen as the site for the desert phase of the program. Some weapons were evaluated at all four natural environmental test sites, while others remained at the SSTB during the entire test program.

The Dog Site Building (Building 4070, Sites 7 and 9) was constructed in 1954 to support the NETP activities. The building was used for environmental testing of weapons and maintenance, and for recording data. The weapons were tested by exposure to natural conditions outside. Different types of storage protection were used. Weapons components, including mechanisms containing depleted uranium and explosives, were disassembled, inspected, and reassembled in the building to evaluate the effects of environmental exposure. The weapons did not contain fissionable materials (i.e., enriched uranium, plutonium) (Sandia 1994c). The test program was completed in November 1959.

2.2.5 Project Mercury Testing

North American Aircraft, Inc. (under contract to McDonnell Douglas Aircraft Corporation) conducted tests of the Project Mercury space capsule from the summer of 1959 through August 1960. The purpose of the tests was to evaluate the capsule parachute landing system utilizing the tracking cameras and extensive water area of the SSTB.

2.2.6 Aeroballistic Test Unit Recovery

The Navy conducted underwater salvage activities to remove test unit weapon debris from the Site 10 Marine Target. The salvage operations included visual surveys by scuba divers, and were conducted in three phases between September 1960 and May 1961. More than 10,000 pounds of material and at least one complete weapon prototype were recovered and returned to the Sandia facility in Albuquerque, New Mexico, for identification. In a June 15 1961 report to the AEC, Sandia indicated that the impact sites had been sufficiently searched to eliminate all security risks (NEESA 1993).

2.2.7 Navy Reacquisition

Beginning in August 1957, certain facilities at the SSTB were returned to the Navy. The Navy was provided use of the SSTB as an emergency seadrome as well as quarters and subsistence for a four-man Navy crew based at the Salton Sea. The Navy also used dock space and seaplane mooring buoys at the base.

The Navy reassumed custody of the SSTB on March 19 1964, with the understanding that the AEC material (i.e., test units) not recovered from the marine target during the test

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unit recovery activities (see Section 2.2.6) would remain the property of the AEC. The base was used for parachute training and testing by various military units. Between 100 and 200 hours of parachute drops were scheduled yearly on the SSTB. The base has also reportedly been used for various military training exercises since 1964.

The San Felipe Lodge and water treatment facility were abandoned due to extensive damage from hurricanes during 1976 and 1977. Full-time base security was discontinued in September 1987. The SSTB is designated for closure in accordance with the Base Closure and Realignment Act of 1988 (BCRA 88), Public Law 100-526, 10 United States Code 2687 note.

2.3 PREVIOUS AND ONGOING INVESTIGATIONS

Previous and ongoing investigations and removals conducted relative to potential contamination at the SSTB include:

- preparation of a PA,
- decommissioning of the base electrical system and removal of soils impacted by spilled dielectric fluids,
- asbestos abatement during demolition of the buildings at the base,
- removal of underground fuel storage tanks, and
- investigation of contamination related to leaking fuel storage tanks.

These activities are summarized below.

2.3.1 Preliminary Assessment

The PA (NEESA 1993) was conducted by the NEESA as part of the Navy Installation Restoration Program (IRP) associated with processing the SSTB for closure under BCRA 88. The purpose of the PA was to identify and assess sites posing a potential threat to human health or environment due to contamination from past handling and/or storage of hazardous materials at the SSTB.

The PA includes information obtained through review of historical records, aerial photographs, site reconnaissance, and personnel interviews. Based on the information obtained, 23 sites located within the current boundaries of the SSTB are identified as posing a potential threat (see Section 1.2). Additional sites are also identified outside the current boundaries of the SSTB, but are not included in the IRP. These additional sites are beyond the scope of the PA and SI and fall under the auspices of the Formerly Utilized Defense Sites (FUDS) program administered by the U.S. Army Corps of Engineers. The scope of the SI is based, in part, on the recommendations presented in the PA for additional work on 22 of the 23 sites. Site 3 was recommended for no further action based on sampling results reported during previous mitigation activities (see Section 2.3.2).

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2.3.2 Electrical System Decommissioning

The PA identified the Abandoned Electrical System at the SSTB as Site 3. Dielectric fluids were spilled from transformers in seven areas on-site as a result of vandalism in August and September 1988. Based on laboratory test results, the dielectric fluids comprised principally mineral oil, and did not contain polychlorinated biphenyls (PCBs). Soil impacted by the dielectric fluid spills was excavated and disposed of off-site. All remaining dielectric equipment at the SSTB was subsequently identified and removed from the site under contract with NWC China Lake. NEESA recommended Site 3 for no further action.

However, the laboratory that performed the confirmatory soil sample analyses for PCBs during the previous excavation of impacted soils has been subject to allegations by the U.S. EPA of misconduct regarding performance of analyses on recent Federal contracts. Therefore, additional soil and groundwater sampling will be conducted to evaluate potential residual PCB and total recoverable petroleum hydrocarbon (TRPH) contamination related to the documented spills. The results of these additional activities will be summarized in a separate report.

2.3.3 Asbestos Abatement

The PA identified asbestos hazards related to asbestos-containing materials (ACM) in building materials at the SSTB as Site 5. Asbestos abatement in the buildings formerly located at the SSTB was accomplished prior to demolition conducted by NWC China Lake personnel in the fall of 1993.

2.3.4 Fuel Storage Tank Investigations

Numerous underground fuel storage tanks (USTs) and aboveground fuel storage tanks were identified in the PA and during subsequent activities at the SSTB. All known tanks have been removed. The tank sites are collectively identified as Site 2. A summary of the tank locations, contents, and status is presented in Table 2-2. The tank locations are depicted in Figures 2-4 through 2-6.

Investigation of potential contamination associated with the tanks at the SSTB is proceeding separately from the SI investigation of IRP sites, and is included under separate CLEAN II CTOs, as well as the Remedial Action Contractor contract, and the FUDS program. The investigation activities currently ongoing include the assessment of soil and groundwater contamination, as well as evaluation of in-situ remediation technologies.